geniX Software Development

User Guide

FSX AI Spotter for FSX

Version 1.4.X

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1 About this guide

This document is divided into the following chapters:

- Chapter 2, “Introduction”, that expose a briefing of the program.
- Chapter 3, “Describing the system”, that illustrates the general requirements
- Chapter 4, “Starting FSX AI Spotter”, that describe a *first start* of FSXAIS
- Chapter 5, “Step by step instructions for using FSXAIS”, that contains detailed instructions on how deal with the program.

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1.1 Who Should Use It

This guide is intended for users of different degrees of knowledge and experience with the following applications:

- MS-Windows Operating Systems
- MS-FSX (release fsx-sp120070510-2038)
- MS-SimConnect.dll installed (release 10.0.61242.0 minimum)

This guide assumes that you have some knowledge of the operating of the above programs and applications.
For more information, see the appropriate related documentation.

2 Introduction

2.1 Purpose

FSXAI Spotter (FSXAIS) is a software add-on for MS-FSX. This software can create AI Aircraft in departure and arrival conditions simply by loading “traffic files”. The traffic files here aren’t in the standard bgl format but are very simple text files.
Moreover, FSXAIS is able to call any custom Windows Console Application in order to generate live traffic files (for example, an application that connect on internet and arranges for the traffic files based on live airport information), or load, at configurable interval the traffic files itself (for example, traffic files generated by a more complex Windows Application).
Purpose of this document is to provide all information on how interact with the program.

2.2 Scope

Scope of this guide is to provide a panoramic view of how to play with FSXAIS.
Further, some mandatory prerequisites are listed in order to run the program.

2.3 System Organization

This document applies to:

- FSX AI Spotter for FSX
- Version 1.3.x
- All builds

2.4 History

Rel 1.4.1

- The complete departure/arrival roaster now is visible unchecking the “Full Log” flag.

Rel 1.3.1

- Improved GUI interface, with some useful info on A/C creation, flight plan assignment and arrival flights queueud.
- Introduced “separation” concepts on arrival flights. Now is it possible to create arrival flights each x seconds one from the other. This to avoiding multiple A/C created in the same sky zone.
- Introduce alerts for take-off and landing aircrafts providing destination runway info, too.
- Try to fix SimConnect server problem on slow PC. The aircraft are created right, but some mandatory info are missed by Microsoft. FSXAIS try to fix these in order to provide better A/C status retrievement.

Rel. 1.1.6

- Old log files are automatically deleted from the folder.
- From now on, FSXAIS will not use A/C Tail as search-key but it will try to use all the airline variants of the same A/C. Example, if an airport schedule presents more than one Ryanair B738, and FSX has more than one Ryanair B738 “Title” A/C to provide, the program will use one of each to fill the schedule.

Rel. 1.0.0

- First public release of the program.

3 Describing the System

3.1 Key Features

FSXAIS is indicated for people loving airports environments and air-watching in the world of MS-FSX (AI Spotters…).
The program, using the user installed AI Aircraft, is able to create both departure and arrival flights in a certain airport, starting from a couple of simple text (Comma Separated Values) files describing the flights themselves.
In order to perform this kind of works, the AI aircraft must have the appropriate values for a couple of properties in the aircraft.cfg file.
An *alerting* system will provide informations on aicraft landing and departing directly into MS-FSX ® main window.

3.2 Program Inventory

FSX AI Spotter is composed by the following files:

File	Note
Ais_traffic.xml	**XML raw DB containing airline traffic information**
Ais_aircrafts.xml	**XML raw DB containing user AI aircraft available in FSX**
Midas.dll	**Internal library of FSXAIS**
Airlines.xml	**XML raw DB containing real world airline information (not used in 1.x)**
Standard.xml	**FSX standard xml template for flight-plan (not used in 1.x)**
FSXAIS.exe.manifest	**.net extension used to load the RTM version of Simconnect.dll**
FSXAIS.exe	**Main FSXAIS executable**
FSXAIS.ico	**Main FSXAIS icon**

FSXAIS.ini	**Main FSXAIS configuration file**
FSXAIS.sub	**Internal file for aircraft substitution (filled with samples)**
Standard.org	**FSX standard template for flight-plan**
Release notes	**FSXAIS latest release notes**
User Manual	**FSXAIS user manual**

That must be all togheter into the destination folder selected by the original setup.

3.3 Environment

To run FSXAIS is necessary:

- MS-Windows Me / XP / 2000 Operating system
- MS-SimConnect.dll installed (release 10.0.61242.0 minimum).
- A running MS-FSX SP1
- A default printer assigned into MS-Windows
- Minimum 5 Mb of free disk space
- About 7Mb of free RAM memory
- FSUIPC.dll (from P.Dowson) 4.5 minimum

We assume also that the system hardware configuration where FSXAIS will run are adequate to run MS-FSX first.

3.3.1 AI aircraft.cfg recommendation

In order to display the best aircraft for a certain flight, FSXAIS needs that:

1. **atc_parking_codes** is equal to the effective 3-letters ICAO code of the aircraft'airline.
2. **atc_model** is equal to the effective 3-letters ICAO code for the aircraft[1].

When more than one airline-ac type aircraft is present in FSX, the assigning phase of an aircraft Title for a certain flight is based on a cyclical algorithm. In this manner, at list one different ac title will be assigned for each different flights.

Note: *For those people that seems give low importance expecially to atc_parking_code, we remember that aspects of a full correct behaviour of the MS-FSX is related on HOW are corrects the aircraft.cfg files along textures and other things.*
Infact, these configurations will affects FIRST your FSX AI environment, next FSXAIS behaviour.

3.4 System Operations

FSXAIS must be started **after** MS-FSX but, only for configuration purpose, it can be started alone. This case is when you need to rebuild FSXAIS internal DB of AI Aircraft configuration or install a **connector**.
Connector is the way to define an external Win32 Console Application that FSXAIS can execute at a certain interval in order to produce the traffic files. This operation is what we indicate as online mode.
In another way, offline mode, FSXAIS simply load the traffic files at certain interval; in this mode, the user could provide himself to generate the traffic file that the program will load.
From the FSXAIS perspective, **the master key in such traffic files is the couple ICAO airline code (3 letter)+Flight number.** This information is used, with one exception, throughout the whole program.

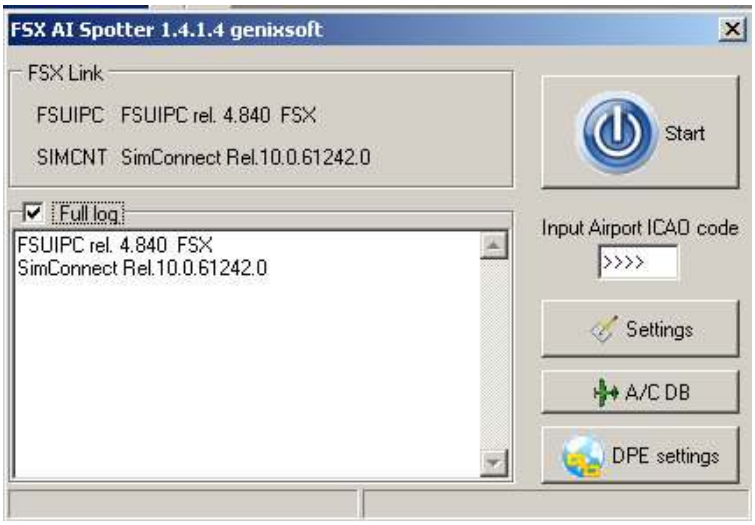
[1] **A good source for A/C codes is http://homepages.mcb.net/bones//Flight_Sim/data/FS_Aircraft_Codes.htm**

4 Starting FSX AI Spotter

4.1 First-time Users

Note: As for the Installation Guide, to start FSXAIS click twice with the mouse on the program desktop icon.

The main FSXAIS interface is the following:



The figure show the main FSXAIS window

Starting from the left, from top to down, we have:

- FSX Link info box: here are the information on the loaded version of FSUIPC and SIMCONNECT
- Log view panel: here are the program log lines written during the running of the application.
- Start button: this button will start the FSXAIS operations.
- Input ICAO code box: here the user must insert the airport ICAO code where the traffic files must be generated
- Settings button: this button will display a window with FSXAIS related settings.

- A/C DB: this button will display the panel that report the current AI Aircraft located on the FSX
- DPE Settings: This button will show the window with Data Service Provider (connector) settings.

Note: The very first time the program starts, it will going to populate the internal AC DB of AI Aircraft first. A window will ask for this: click "Yes" and wait for the DB creation

A status bar is also present; during the simulation it will be filled with useful operational informations.

4.2 Register FSX AI Spotter

FSXAIS is first released as shareware form, with the following limitation:

1. Max 3 flights potentially generated[2]

In order to *unlock* the above limitations, you must have registered the programs buying a personal license from the vendors.
Having these data, click on the Settings button, next on the ***Register*** button. A dialog box will appears:

Inputs for the register windows

Type the user-id and serial number you get into the appropriate fields and then click on the **Ok** button: if the data are valid, your copy of FSXAIS is well registered. Thank you!

[2] **This means that FSXAIS will count each flight in the traffic files as valid regardless of the creation or not in FSX**

4.3 Exit FSX AI Spotter

To exit FSXAIS program, click on the standard Windows *close button*, on the upper left corner of FSXAIS main window.

Warning: FSX AI Spotter must be closed before MS-FSX ®

5 Step by Step Instructions for using FSXAIS

In the following chapter, we'll assume that MS-FSX is up and running: so, before continue reading this user guide, please **START FSXAIS BY DOUBLE-CLICKING ITS DESKTOP ICON**

5.1 Instructions

Referring to the main FSXAIS window, edit the ICAO code text of the airport where you stay located with your vehicle (here KJFK) and next click on the **Start** button.

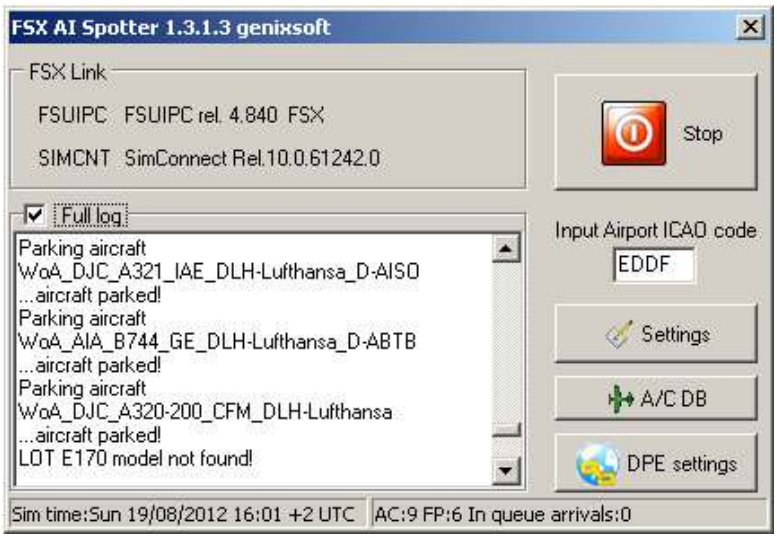
FSXAIS will start the routine for the **connector** (if the online mode is enabled), next the routine for cancel all "static" BGL related aircraft, next it will collect the FSX-Time (UTC).

The routine from the connector will produce the traffic files and their content displayed in the log window:

The main (working) FSXAIS window

Depending on the number of aircrafts to be displayed, FSXAIS will work like the following screenshot. One for the departure roaster and one for the arrival.

The Log view display informations about operationals routine of FSXAIS.
Each departure flight is displayed using the best matched AI Aircraft located in FSX; if no such aircraft is available, that flight will be not visualized.
When it is the time to depart, FSXAIS will assign the related flight plan to that aircraft.



Main FSX Window with departures working.

Each arrival flight is displayed using the best matched AI Aircraft located in FSX; if no such aircraft is available, that flight will be not visualized.
Depending on the “A/C proximity” selected (see “Settings” paragraph for further info), FSXAIS will try to display the arrival flight at a distance from the airport respect to the flightplan and according to the arrival time scheduled.

5.1.1 Status bar info

The status bar info are divided into two areas. At the left there is the current MS-FSX ® simulator time plus the UTC shift as they coming from the simulator itself. At the right there are three informations *live*:

- AC: aircrafts created (dep+arr).
- FP: flightplans (created) and assigned to aircrafts.
- In queue arrivals: if the “Separation” value is greater than 0, all arriving aircrafts will be forced in a queue. Each time interval (separation value) one aircraft will be visualized.

5.1.2 Pausing FSXAIS

After start working FSXAIS, the Start Button become **Stop** button.
This Stop button is useful when you need to stop working FSXAIS **but not the actual AI traffic in the FSX generated by the program, that remain alive.**

5.2 Errors and Malfunctions

FSXAIS is able to detect some errors and display messages on the Windows desktop.
Some windows will be displayed if one of three important files are missed in the main FSXAIS directory:
ais_aircrafts.xml – A box window will appear with the message “AI Aircraft DB not exists! Exiting...”
Standard.org - A box window will appear with the message “FSX Standard template plan not exists! Exiting...”
ais_traffic.xml - A box window will appear with the message “AI Traffic DB not exists! Exiting...”

After the message box, the application will exit.

Another message box could be displayed in the case of wrong registration code (or user): “Not a valid registration”. In this case, the program will continue to work in the *shareware* mode.

A warning will be written in the *DPS Setting Window*, in the space for the connector information if these are missed once loaded a connector program: “Warning! No info from connector. Please re-load”. This error could put FSXAIS in the offline mode; the error could be related to the connector itself.

5.2.1 FSX AI Spotter Messages

These messages could be displayed in the FSXAIS log space:

Message	Where	Why
Connector Execution problem !	**Problem encounter during execution of the connector application during its installation phase ("Load" button in the DPS setting window)**	**General error. The executable could be the primary cause of this.**
Error retrieving FSX current state	**During the checking of FSX freezed state before any important phase of the program**	**FSXAIS is not able to get the current freezed status of FSX.**
FSX Freezed. Wait next interval.	**During the checking of FSX freezed state before any important phase of the program**	**FSX is not in *Ready to fly* mode[3].**
Error retrieving FSX current time!	**During the checking of FSX time, each minute**	**Heavy load on FSX SimConnect interface**
Error receiving AC_id for	**Creation of parked aircraft (Departure phase) or creation of enroute aircraft (Arrival phase).**	**Heavy load on FSX SimConnect interface, no AC-Id assigned[4]**
FP NOT assigned	**Flightplan not assigned due a problem with FSX**	**Heavy load on FSX SimConnect interface**
Error calling SetTrafficDensity(0)!	**Problem aencounter at first start of FSXAIS**	**FSUIPC related call failed**
Stopping simulation	**The user clicked the "Stop" button or an error was encountered**	**Normal behaviuor in the most cases.**
offline work suspended: missing text files	**During the offline works**	**No traffic files to load.**
Connector Execution problem: stopping simulation...	**Problem encounter during execution of the connector application during FSXAIS running**	**General error**

[3] when FSX is loading, or reloading a flight or aircraft or scenery.

[4] **FSXAIS will try to assign the correct ID as the aircraft, despite this error, is EVEN created.**

Connector Timeout: stopping simulation...	**Problem encounter during execution of the connector application during FSXAIS running**	**The remote Web Data Provider didn't respond in timely manner.**
Probably Network connection Error: stopping simulation...	**Problem encounter during execution of the connector application during FSXAIS running**	**The connector works fine but no traffic files where produced; probably a Web Data Provider remote problem.**

5.2.2 SimConnect specialized messages

Below the table the display FSUIPC (error) messages that can appears in the FSXAIS log space:

Message	Why
SIMCONNECT_EXCEPTION_CREATE_OBJECT_FAILED	**FSX is not able to load/create the AI Aircraft selected by FSXAIS. Sometimes, for A/C enroutes, this issue is resolved setting a lowest AC proximity value.**
SIMCONNECT_EXCEPTION_OBJECT_ATC	**The airport where is FSXAIS working doesn't have ATC Parking space to accommodate the aircraft**
SIMCONNECT_EXCEPTION_OBJECT_CONTAINER	**The A/C is installed in FSX but is not detected. Restarting FSX should resolve the problem.**

Warning: **All the SIMConnect error have the form SIMCONNECT_EXCEPTION_xxxxxx, where xxxxxxx is a message string ov variable length. The table above lists only those messages that are most common[5]**

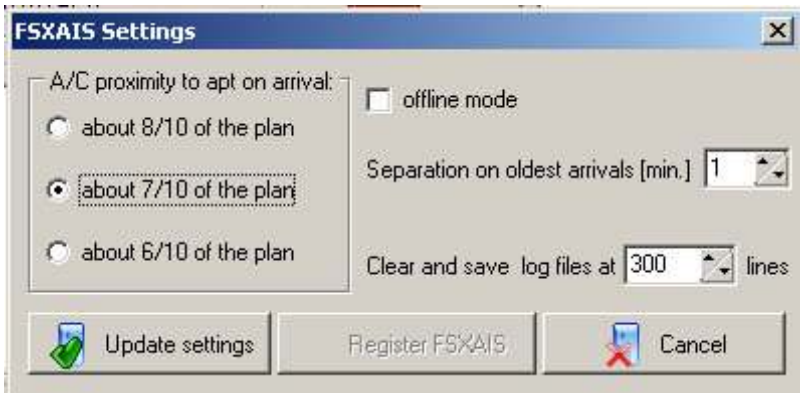
[5] **Please report to geniX technical support.**

5.3 FSXAIS settings windows

In this chapter we are going to explain the various optional settings of FSXAIS.

5.3.1 (FSXAIS) Settings

Below the screen shot of the dialog box:



FSXAIS general settings window

The **A/C proximity** selector tells FSXAIS the distance (more or less), respects the flight-plan, where it should create the enroute aircraft that will landing. The creation is made according with the arrival time for the flight.

Note: FSXAIS doesn't take in account any third party application that manage arrival flight nor FSX policy for landing aircraft. This means that the arrival time could be modified from other programs (such as AISmooth) or FSX AI-Algorithm itself.

The **offline mode** flag permits to tell FSXAIS how manage flights creation:

If this flag is checked, FSXAIS will use the timer interval (see DSP settings) only to load the traffic files without calling any external connector. The user is responsible to provide (in any way) such files to FSXAIS.[6]

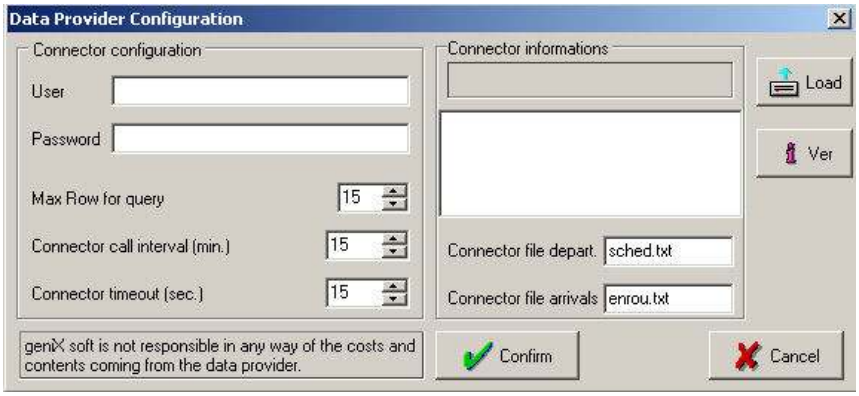
The **Separation** value is used to avoid "groups" of aircraft in the same sky zone. All the arriving flights/aircrafts will be created with the interval selected here.

The **clear and save log** variable determines how many lines the log windows will contains before clear and save the log[7] in a text files.

[6] **geniXsoft provide for free the Technical Specs for the connector and the traffic files format**

5.3.2 DPE settings

Below the screen shot of the dialog box:



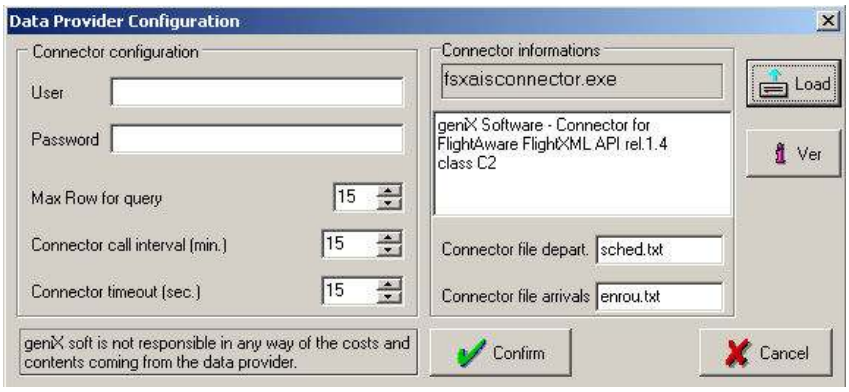
FSXAIS Data provider configuration settings window

This windows is mainly for “connectors” configuration.
The **connector configuration** box permits the input of User and Password couple for access Data Provider on the internet. These values are passed to the external connector when called.
The Max Row for query – that can be optional – is used in the case the connector can ask the DPE for a certain number of flight instead of all.

The **connector call interval** defines the minutes between two consecutive connector call.
The **connector timeout** defines how many seconds FSXAIS should waits before declare a *connector timeout*.
The **connector informations** box groups the connector data, such as filename and version.
The filename for departure and arrivals **normally** are filled by the connector itself during the loading phase.

In order to load a connector, click on the “Load” button. A standard Windows *File-Open* dialog will appear. Select the connector executable and click “Ok”.
The DPE Settings window will filled with the connector name, the release note and the connector traffic files names.

[7] **Log files are deleted on per-day basis.**



FSXAIS Data provider connector settings

If no connector is specified, the standard names are used[8]:

- sched.txt for departure flight
- enrou.txt for arrival flights

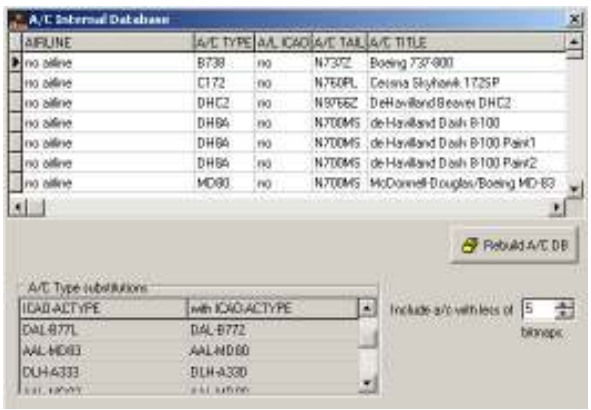
5.4 FSXAIS AI Aircraft Database

FSXAIS own an internal database of the AI Aircraft that are installed in the user' FSX simulator.

The creation of this aircraft is obviously fundamental for the FSXAIS program. The following chapter will explain the use of the A/C DB windows

5.4.1 A/C DB window

Below the screenshot of the A/C DB window:



FSXAIS A/C internal DB settings

The magic button is the “Rebuild A/C DB” but it is important also the value for the **include a/c with less of** that the user can set in order to tell FSXAIS to search and include only aircraft wich texure folder count a certain number of bitmap files. In this manner, the AI aircraft DB will contain only the *lightest* aircraft and so reduce the FSX work to diplay them.

The “**A/C Type substitutions**” is an utility that is used to match the data[9] coming from the external source (by DPE connector) with those of user AI aircraft.

For example, if the external provider codes the Boeing 777 Long range aircraft with the string B77L but the user has only a B772 for that airline, FSXAIS will use this instead of say “aircraft not found” in the log window.

Note: *This substitution is performed during the FSXAIS working and not during DB creation*

[8] **This name must be used in case of user provided application that wish to dela with FSXAIS (offline mode)**

[9] **The value of atc_model**